

REMARKS

Applicant's representative thanks the Examiner for the courtesy of the interview conducted November 8, 2001, and the telephone interview of June 19, 2002. During the telephone interview the Examiner withdrew the rejection of claims 69-71 over Kitaguchi in view of Almen as Almen does not describe the claimed degree of freedom along the drive arm axis.

As discussed at the interview of November 8, 2001, applicant's have amended claims 45, 72 and 75 to expedite prosecution. Applicant reserves the right to further pursue claims of the scope of claims 45, 72 and 75 prior to amendment.

Claims 45, 69, 70, 72 and 75 are in independent form.

The Examiner has rejected claims 45-47, 49, 50, 54-62, 66-68, 72, 73 and 77-82 over Kitaguchi in view of Lind; and claims 72-76 over Kitaguchi in view of Almen.

In the Examiner's action of October 16, 2001, in responding to applicant's arguments submitted in the response of September 27, 2001, the Examiner contends:

[T]hat to substitute one joint for another is well within the abilities of one of ordinary skill in the art. There need not be an explicit reason to do so. The fact of Kitaguchi using rocking motion does not preclude the application of the secondary references which use wobbling. Note, wobble plates, as a term in the art refers to a rotating plate which none of the references have, see US pat. 6.053.091. All the applied references use a rocking motion and therefore they must possess a piston joint of multi-degrees of freedom. The ball joint 4 of Kitaguchi in figure 5 is deemed to be a universal joint. Arguments directed to figure 4 of t Kitaguchi are moot because that embodiment was not relied on.

Applicant respectfully disagrees. However, to expedite prosecution, applicant has amended claims 45, 72 and 75 to recite a universal joint connecting the transition arm to the stationary support by two pins to permit pivoting motion about two axes. The ball joint 4 of Kitaguchi is not the claimed universal joint.

As discussed in the response of September 27, 2001, Kitaguchi states that the embodiment of Fig. 4 utilizes a "cross-type universal bearing" (see, for example, col. 6, lines 1-7 and col. 8, lines 18-19 of Kitaguchi). Kitaguchi further states that the embodiment of Fig. 4 is applicable for use with the cylinder arrangements of Figs. 3A and 3B, in which only two-

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dimensional motion occurs, and thus only two degrees of freedom are provided at the joint between the piston and shaft 12 (see, for example, col. 8, lines 18-27). There is no suggestion or motivation in the references to provide the piston joints of Lind or Almen for use with the mechanism of Fig. 4 of Kitaguchi, because the piston joints of Lind and Almen provide a greater number of degrees of freedom than are employed in the mechanism of Fig. 4 of Kitaguchi.

The Examiner has rejected dependent claim 51 over Kitaguchi in view of Lind and Whatley. Whatley does not overcome the deficiencies in Kitaguchi and Lind discussed above. Whatley does not provide a suggestion or motivation for modifying the joint of Kitaguchi.

Therefore, applicants submit that claims 45, 72 and 75, and there dependent claims, are patentable over the cited art.

Attached is a marked-up version of the changes being made by the current amendment.

Applicant asks that all claims be allowed. Enclosed is a check for excess claim fees. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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Version with markings to show changes made

In the claims:

Claims 46, 73 and 76 have been cancelled.

45. (Amended) A piston assembly, comprising:

a double ended member having first and second elements configured for linear motion along a common axis, at least one of the first and second elements being a piston,

a transition arm coupled to a stationary support, the transition arm including a drive arm coupled to the double ended member by a joint positioned between the first and second elements, the joint including

an outer member configured for movement relative to the first and second elements, the outer member defining a opening for receiving the drive arm, and

an inner member mounted within the outer member for movement relative to the outer member, the inner member defining an opening for receiving the drive arm, and

a universal joint connecting the transition arm to the stationary support by two pins to permit pivoting motion about two axes.

72. (Amended) A piston assembly, comprising:

a plurality of double ended members, each double ended member having first and second elements configured for linear motion along a common axis, at least one of the first and second elements being a piston,

a transition arm coupled to a stationary support, the transition arm including a plurality of drive arms, each drive arm defining a drive arm axis, and

a plurality of joints, each joint for coupling one of the plurality of drive arms to a respective one of the double ended members, each joint providing rotation about the drive arm axis, and sliding in the direction of at least one of first and second orthogonal axes perpendicular to the drive arm axis, and

a universal joint connecting the transition arm to the stationary support by two pins to permit pivoting motion about two axes.

75. (Amended) A piston assembly, comprising:

at least two double ended members, each double ended member having first and second elements configured for linear motion along a common axis, at least one of the first and second elements being a piston, and

a transition arm coupled to a stationary support, the transition arm coupled to each of the double ended members by a joint, the joint being positioned between the first and second elements, the joint being configured to move relative to the first and second elements along first and second orthogonal axes, the first and second orthogonal axes being perpendicular to the common axis, the joint defining two opposed flat surfaces for the transfer of load between the first and second elements and the transition arm, and

a universal joint connecting the transition arm to the stationary support by two pins to permit pivoting motion about two axes.

New claims 83-93 have been added.